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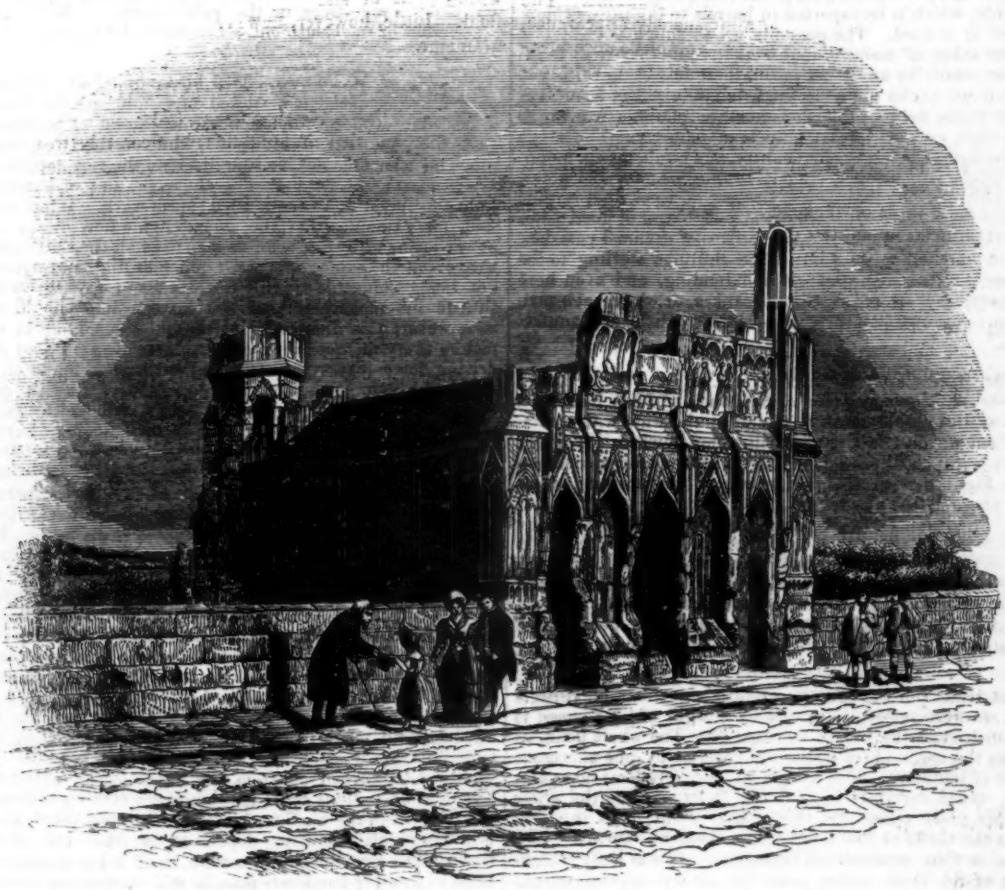
EDWARD IV.'S CHAPEL ON WAKEFIELD BRIDGE.



[Chapel on Wakefield Bridge.]

ON the handsome bridge of nine arches which spans the river Calder, at Wakefield, is the very beautiful remain shown in the above engraving. It is undoubtedly ancient, and stands upon the site of one built by Edward III., which appears to have been pulled down and rebuilt by Edward IV., in the most elaborate style of the architecture of his period, in memory of his father, Richard, Duke of York, who was slain near Wakefield, in the battle fought between him and Margaret of Anjou, the bold-spirited wife of Henry VI., in 1460. Edward IV. is therefore looked upon as the founder of the chapel. According to the following quotation from Leland, it should appear that the chapel was not alone indebted to the liberality of the monarch for its support. He says, "On the est side of the bridge is a right goodly chapel of our Lady, and two cantuarie [chantry] prestes founded in it of the fundation of the townesmen, as sum say, but the Dukes of York were taken as founders for obteyning the mortemayn. I heard one say that a servant of King Edward (IV.), or else of the Erle of Rutheland, brother to King Edward, was a great doer of it." Ten pounds per annum was the amount of the endowment for the payment of the two priests, which was withdrawn at the dissolution of the monasteries, since which period the chapel has been allowed to fall into decay, and even within the last few years its beautiful ornaments have received considerable damage. The chapel stands about the centre of the bridge, and, as we have seen, on the east side. It projects over and partly rests on the starlings of the bridge. Its general architectural character is of the richest Gothic. Its dimensions are in length about ten yards, in breadth eight. The east window, which overhangs the river, is adorned with traceries of the most delicate kind, and with perforated parapets. The west front is, however, the great feature of the building. It is divided in the lower part, by buttresses, into five compartments or recesses, having lofty pediments and pointed arches, in relief, with the spandrils richly flowered. Above is an entablature, with five smaller compartments with rounded arches, in relief, representing subjects from Scripture. The whole is surmounted with battlements, parts of which however, as well as of the entablature, have been broken away. These

different portions of the front are all enriched with such a profusion of delicately beautiful ornaments as to make the chapel quite an architectural gem.

The town of Wakefield is pleasantly situated on the side of an eminence, sloping gently down to the river Calder, and is surrounded by a picturesque and fertile country. The many Roman coins and other memorials of that people which have been found here, indicate the former existence of a Roman station of some kind upon the site of the present town. The streets of Wakefield are generally wide, well paved and lighted, and have a peculiarly neat and clean appearance. Most of the houses are well built, and many are large and handsome. The town has however somewhat of a melancholy appearance, owing to the various evidences it presents of its once prosperous and extensive woollen manufacture having declined very considerably. The Tammy Hall, for instance, measuring no less than seventy yards in length and ten in breadth, which was erected by subscription for the sale of the woollen stuffs produced in the town, is now converted into a private manufactory.

The chief trade of Wakefield at present is in corn, of which immense quantities pass through the town. Many of the warehouses built for the storing of the grain are on the most extensive scale. A Corn-Exchange was erected in 1823. A considerable trade is carried on in coals, which are brought from the neighbourhood in large quantities, and transmitted in barges down the Calder, and thence up the Ouse to York, or by the Humber to Hull. The river was made navigable in 1698. At the foot of the bridge is the Soke Mill, where the persons resident within the Soke, which comprehends Wakefield and several neighbouring villages, were compelled to have their corn ground. Much barley is grown in the vicinity, and large quantities of wool are sold here. The carrying association known by the name of the Aire and Calder Navigation Company have here one of their principal establishments. By its means daily communications on the canals take place between Wakefield and Leeds, Barnsley, Huddersfield, &c.

Wakefield contains a population of about 10,000; it is the place of election for members of parliament for the West Riding of the county; and the office for the registering of deeds relating to estates in the West Riding is also kept here.

Among the public buildings most worthy of notice we may mention the church, a noble and spacious edifice, erected in the reign of Henry III. The spire is one of the highest in the county, its top being no less than 237 feet from the ground. The market-cross is a fine structure of the Doric order, consisting of an open colonnade supporting a dome. The House of Correction for the West Riding is a very extensive pile of building, constructed on the improved plan of county prisons, and comprising a tread-mill which grinds corn, separate yards, a chapel, school for juvenile offenders, day-rooms, and 370 sleeping-cells. The prisoners are employed in weaving coarse cloth, calico, and linsey. Wakefield has various dissenting chapels, a dispensary, theatre, and a handsome building containing a library and news-room, and the upper part of which is used for balls, &c. At the northern extremity of the town is a kind of suburb called St. John's, consisting of a collection of very handsome houses, with shrubberies, pleasure-grounds, &c., and a church, which cost in the erection about 10,000*l*. About half a mile north-east of Wakefield is the West-Riding Pauper Lunatic Institution, erected about 1817, and which contains accommodation for 250 patients. There are also mineral springs in the neighbourhood, of a quality somewhat similar to the Cheltenham waters.

Among the schools of the town, we must not omit to mention the grammar-school, founded in 1594 by Queen Elizabeth. It gives a classical education to 40 scholars, and has in connection with it a writing-school. There are several exhibitions at the universities for boys from this school. Dr. Bentley, Dr. John Potter, Archbishop of Canterbury, and Dr. John Radcliffe were all born here. An extensive and well-supported proprietary school was also established in 1834, and is attended by about 200 scholars. The spot where the Duke of York fell, near Wakefield, was enclosed with a wall, and a stone cross erected in commemoration of the circumstance. The cross was demolished during the civil wars between Charles I. and the parliament. The ring of the Duke was found here but a few years ago. Sandal Castle, the seat of the Duke, which was a very magnificent place, is within sight of and only two miles distant from Wakefield. Little, however, now remains to attest its former grandeur.

NOTES ON THE NEW FOREST.—No. II.

[Concluded from No. 493.]

THE accumulation of mud along the coast between Calshot and Hurst castles, though it adds very considerably to the seaward edges of the banks, appears to add very slowly, if at all, to the cultivated surface, or to the meadows along the little æstuaries, which meadows have in all probability been formed by débris brought down by the streams, and rejected and returned by the tide. This species of formation requires however that the tidal waters should act with some energy, in order to force the débris up to the full level of the high-water mark, or above it; and this again requires some depth of water in the offing, and a sloping bottom of hard matter, to give the requisite upward impulse to the surge. On many places of this bank, as it now exists, there are not more than five feet of water at high-water of spring-tides, while the surface, as we have said, is tangled with zootera and other marine plants. These circumstances reduce the force of the water to almost nothing when it reaches the shore; and this is the reason why the sea has so little influence here, either in the forming of dry land, or in the destruction of that which is already formed. The north-east shore, along the Southampton Water, partakes of the same quiet and permanent character, although the banks do not extend so far within the high-water line. They are pretty nearly proportioned however to the action of the general tide, for the Southampton Water being a cul-de-sac, which rather expands above its entrance, the tide in it is not so strong as in the thoroughfare channel of the Solent. These circumstances tell not only in the undisturbed position of the coast-line, but in the foliage of the trees, which, along all the shores of this character, is as fresh and green, down almost to the water's edge, as if it grew upon the banks of an inland expanse of the most limpid freshwater. These circumstances render both portions of the coast very delightful places of residence; and there is no doubt, when the completion of the South-Western Railway brings Southampton within little more than three hours' distance of London, multitudes of people will seek health and freshness and rural enjoyment upon these balmy and beautiful shores.

When we quit this portion of the shore of the Forest district, passing Hurst Castle, we find the shore of a very different character. Upon the general outline it is nearly as long, at least within Hampshire, to the westward of Hurst Castle, as to the eastward of it; and it consists of two bights, or inbends of the line of coast, one of small curvature, to the westward of Christchurch, or Hengistbury Head, and another and deeper one, Christchurch bay, extending from the latter to Hurst Castle. The coast of both these bays is of much the same character, consisting of a sandy and gravelly beach, upon which the water ripples or beats directly, and a cliff of loose tertiary matters—various clays, sands, and gravels immediately inward of that, portions of which are ever and anon decomposed by the joint action of the sea, the land-floods, the land-springs, and the weather—so that, upon the

whole, the sea is advancing upon the land. The cliff here varies considerably in elevation, being in some places more than a hundred and fifty feet high, while in others, where small streams find their way to the sea, the levels at which they run are so low, that high-water flows up them for some distance, and gives them the aspect of little arms of the sea. As the sides of these are generally well wooded, either with trees or with coppice, they form an agreeable contrast with the comparatively treeless surface of the intervening high grounds, which, though generally under culture near the cliffs, gradually pass into a bleak furzy moor, which forms the southern part of the Forest. In the cliffs along this shore of the Forest district there are numerous fossil shells, found chiefly in a stiff tertiary clay, which is probably an æstuarial formation, containing fossils both of the fresh water and of the salt, as is the case with the strata north of the chalk ridge in the Isle of Wight.

The beds containing fossils, in the tertiary formation, extend a very considerable way northwards through the Forest, though of course, as their natural position is at some height above the chalk, they crop out long before we arrive at the chalk ridges of Hants and Wilts to the north. The direction of these through the whole extent of the Forest, from the cliff in the south to the most northerly situation in which they are discovered, has not been satisfactorily traced.

There is one matter worthy of our notice in this singular district, and that is the great disproportion between the dells or ravines in which the brooks and small rivers run toward the sea, and the small quantity of water in those rivers, even when they are swollen by the heaviest rains. At present, the most turbulent of them—and none of them are very turbulent—does not disturb a rod of ground to the depth of a foot in the course of the most stormy year; and yet one and all, and more especially those trifling ones which find their exit in Christchurch Bay, flow along dells of considerable magnitude. In order to account for this, we must suppose that, at some period of its history, the New Forest, and indeed the whole of the country, must have been far more thickly wooded, and in every respect more humid than it is at the present time; because, from the similarity of the strata on both sides of these dells, and the fact that the ends of those strata are cut on the opposite sides, it follows as matter of course that the dells must have been formed by surface action, and in nowise by any geological force, that is, by any upheaving or depressing from causes acting below—for when such causes operate, they bend the strata and alter their inclinations, instead of simply cutting them asunder, as is done by surface action, and is here exhibited. The dells also through which those little brooks flow are larger and deeper, in proportion to the quantity of water in the brooks, than the valleys of the larger rivers in this part of the country,—the Avon, the Teste, and the Itchen; and from the character of the surface, none of those little rivers could have been assisted in forming its dell by the outlet of any lake or large portion of water, such as we find in countries of different geological formation, and such as may have taken place in the case of the larger rivers in this part of England, in the valleys of which there are at least pretty clear indications of obstacles which have been worn through by the action of the waters, as for instance, in the disruption of the chalk strata, on the east and west sides of the Itchen at Winchester, which disruption must however have taken place long before the commencement of the period recorded in history.

With regard to the inroads of the sea upon the cliffs to the westward of Hurst Castle, we have also some evidences which fix the date of the commencement of devastation there as not being so very early as we might have been led to suppose. At low-water of very great spring-tides there are perceptible within the low-water mark the remains of salterns, or enclosures for the partial evaporation of sea-water, in order to obtain culinary salt from it by a subsequent boiling; and it is by no means likely, if the beach had possessed the character which it possesses at present, and the sea had been making such inroads as it makes now, any such permanent work would have been there effected. Those remains of salterns are on the manors of Milford and Hordle, and on the average about three miles to the westward of Hurst Castle.

The chalk formation, though not far from the border of the New Forest district, where that abuts upon Wilts, and though, for a considerable distance southward in the Forest itself, it cannot lie at any considerable depth below the surface formations, yet does not appear uppermost anywhere within the Forest or its precincts. The whole forest consists of the tertiary formation above the chalk; and as is the case with that formation in other places of England, it varies greatly in different places, though within the Forest itself the prevailing soil is sand, or sandy loam, more or less mingled with clay, and, generally speaking, pretty strongly impregnated with iron. The quantity of oxide of iron contained in this formation often gives it very considerable hardness and consistency, although nowhere within the Forest is it in such compact masses as to be of any value as building-stone. There are however certain districts where the iron predominates, so far as that a valuable iron-ore is readily obtained, the smelting and manufacture of which formed, in the olden times, an important and valuable branch of occupation. Before the value of the coal-mines was duly appreciated, and coal became the staple article of fuel, and coke the one employed in the smelting of iron, such districts as the New Forest and the Weald of Sussex and Kent possessed an importance to which they can now lay no claim. In those days the charcoal furnished by their timber was used in the small old-fashioned "bloomeries," or air-furnaces, in the reduction of iron from the ore; and as iron-stone near the surface was all that could be rendered available in those days, and carriage from a long distance was entirely out of the question, the iron-stone beds, in such districts as have been alluded to, were of great value in an economical point of view.

Up to a comparatively recent date the iron-works at Sowley, about midway between the Lymington and Beaulieu rivers, or three miles from each, were carried on to a very considerable extent and not unprofitably, as the water accumulated in Sowley pond was made use of as a power in working the necessary machinery; these have however given way before the more successful competition of Wales and the midland counties, just as the woollen manufactures of the South and West have given way before those of Yorkshire.

The New Forest district has its surface composed of one or other of those beds known by the name of the tertiary formation, which formation consists not only of different strata superposed upon each other over the chalk upon which it rests, but those beds vary at short intervals in breadth, and give evidence that they have been gradually deposited through a long period of time. That portion of the Forest which lies northward, toward the head of Southampton Water and the downs of South Wilts, is of course the lowest part of the formation, whatever may be the present height of its surface above the level of the sea. Accordingly, true to what is found in other cases, with regard to this formation, the soil of a considerable portion of this part of the Forest consists of plastic clay. This is very conspicuous in the brick-pits about Ealing, and it extends westward along the hollow, by Minstead, and then turns round for a short distance along the upper course of the streams of the Boldre, or Lymington Water, though the precise outline of it has not been defined, nor is it indeed easily definable. This plastic clay passes gradually into a sandy loam at the slopes, which sometimes attains considerable elevation,

but it is generally lost in sand or gravel on the more extensive heights. In the eastern parts of the Forest, a considerable extent of the inland part is occupied by crag, and this is naturally very sterile. Beaulieu Heath may be considered as the grand centre of this crag formation, and the downs to the eastward of Lyndhurst as the highest part of it. In general, these are now destitute of vegetation, except a small beech here and there, which appears as if consumed rather than nourished by the hungry soil. Still, wherever there is a hollow, there are trees; and when there is a mixture of loam in the soil, they acquire a proportional magnitude.

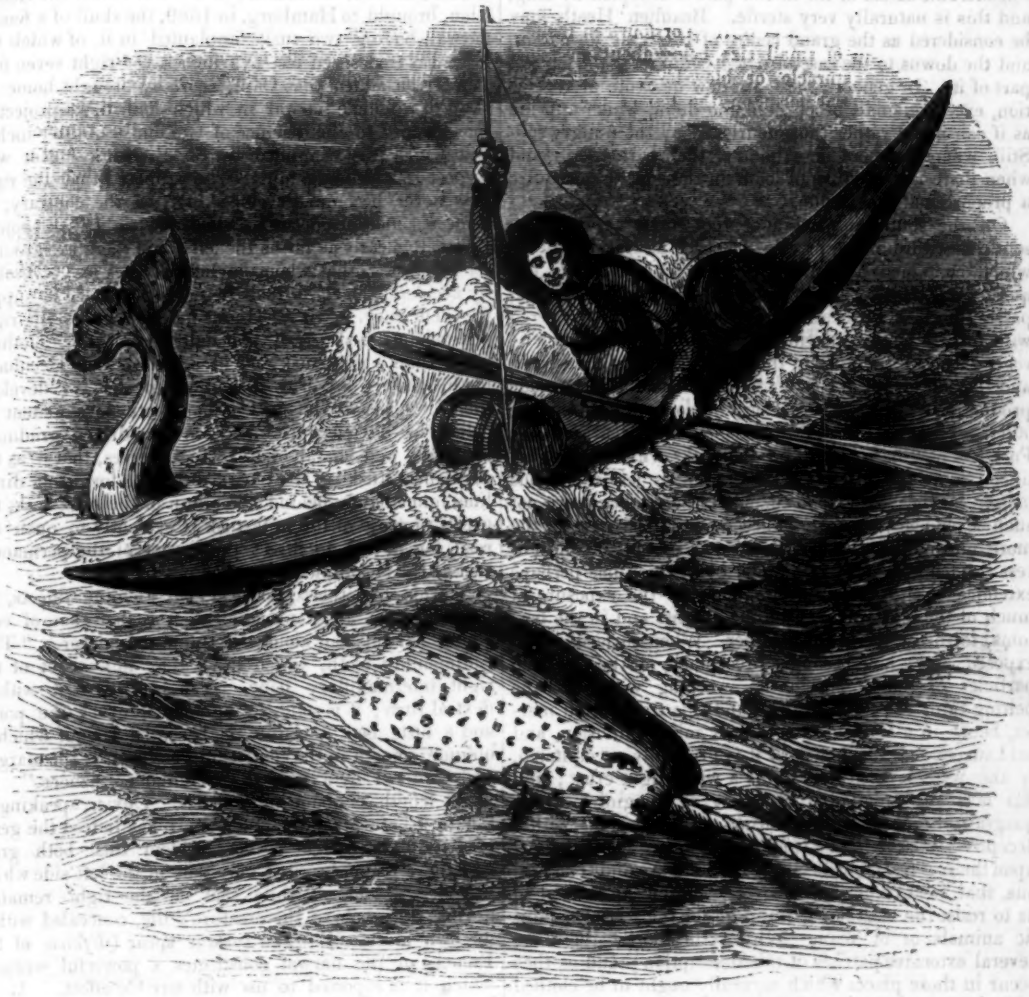
On the southern margin of the Forest again, to the south-westward of the private property at Brockenhurst, which contained a church and village before the Conquest, and was not afforested by William, the ground passes into a sandy heath, in many places thickly covered with furze, thereby showing that it is more favourable to vegetation than the crag in the opposite part of the Forest, and that, under proper management, it may still be made productive of excellent timber, of some description or other. Perhaps the natural tendency of no district of the Forest is now naturally to produce oaks without some artificial assistance; but as there mingles less calcareous matter in the loam upon the slopes here, they have not such a tendency to run into beech, as is the case in the more northerly parts of the wooded portion of the Forest. There is however another evil, which has perhaps extended itself here, in consequence of the exposure of much of the surface, both on the heights and in the bottoms, to the action of the weather. When surfaces are so exposed, every hole becomes a receptacle for those minute particles of soil of which the sweeping winds and the pelting rains rob the heights; and this transported matter, being in a state of exceedingly minute division, and held suspended in water until it is gradually precipitated, or the waters dried up, forms a water-tight crust; and this lays the foundation of a bog or quagmire, which quagmire continues accumulating year after year with a deceptive crust of moss and the coarser marsh plants upon the surface, while below it is so sludgy and treacherous, that instead of giving a tree hold of the ground so as to resist the weather, it is unsafe for the feet of domestic animals or of man. Within the Forest there are several extensive patches of this description; and as they occur in those places which naturally ought to be clothed with the most luxuriant timber or the finest pasture, we cannot help feeling that there has been some neglect, or, at the best, very great ignorance, in the management of this singular portion of the kingdom.

THE NARWAL, OR NARWHALE.

(*Monodon monoceros*, Linn.; *Narwalus microcephalus*, Lacép.)

AMONG the Cetacea inhabiting the dreary realms of the Polar Ocean, the Narwal, if not the largest or among the largest, is nevertheless one of the most remarkable: its general form resembles that of the porpoises: it has, however, no teeth, properly so called, but two ivory tusks, or spears, implanted in the intermaxillary bone, but of which the right remains usually rudimentary and concealed during life. The left tusk, on the contrary, attains to the length of from five to seven or eight and sometimes ten feet in length, and projects from the snout in a right line with the body, tapering gradually to a point, with a spiral twist (rope-like) throughout its whole extent. In its structure and growth this tusk resembles that of the elephant, being hollow at its base, or root, and solid at its extremity. It is in the male only that this spear-like weapon, under ordinary circumstances, becomes duly developed, the females (and indeed the young males) having the left as well as the right tusk concealed within its bony socket. This rule, however, is not invariable, for females have not only been seen with the left tusk projecting, but the right also; and we may credit the account of Lacépède, who states that Capt. Dirck Peterson, commander of a vessel called the Golden Lion, brought to Hamburg, in 1689, the skull of a female narwal, having two tusks implanted in it, of which the left measured seven feet five inches, the right seven feet. It may be added that Capt. Scoresby brought home the skull of a female narwal in which both tusks projected, though only to the distance of two and a quarter inches, and which was examined by Sir E. Home. Nor with respect to the male must it be supposed that the right tusk never becomes developed, for, on the contrary, instances sometimes occur in which the right tusk projects externally nearly as far as the left; and there are grounds for supposing that when the left becomes lost, or broken by accident, the right tusk becomes developed to supply the deficiency. Sir E. Home indeed regards the right rudimentary tusk (as it is usually found) to be nothing more than a milk-tusk, or, in other words, a deciduous tooth, not yet lost or shed, and waiting for the development of a permanent tusk (should its development be called for by circumstances), to be driven gradually forwards, and so fall out. He observes, that "as the permanent tusk in the narwal begins to form in a direct line, immediately behind the origin of the milk-tusk, the great purpose of the milk-tusk is evidently to open the road for it, and to direct the course of the permanent tusk till it is completely pushed out by it."

To this hypothesis, however, Dr. Fleming objects, remarking that an examination of the dentition of very young narwals can alone determine the matter. "This rudimentary tooth, which lies within the socket of the right intermaxillary bone, is slightly twisted with a dextral turn; it is solid throughout, blunt at the point, and a little bent towards the base, the face of which is oblique, smooth in the centre, uneven towards the margin, and bordered by a ring or tubercular eminences." Its usual length is about nine inches. Cuvier, speaking of the tusks of this animal, says, "It has indeed the germ of two tusks, but it is very seldom that both grow equally. In general it is only that on the left side which becomes developed, while that on the right remains, during the whole of the creature's life, concealed within its own alveolus." The tusk or spear (*défense* of the French) of the narwal constitutes a powerful weapon, which it is reported to use with terrible effect. It is, however, its only weapon; for it has neither the formidable teeth of the grampus nor of the cachalot. Crantz, in his 'History of Greenland,' thus describes the "*monoceros*, also called *narhval*." "This species is commonly twenty feet long, and has a smooth black skin, sharp head, and little mouth. A round double-twisted horn runs straight out from the left side of the upper lip. It is commonly ten feet long, as thick as one's arm, hollow inside, and composed of a white solid substance. It is probable he uses this horn to get at the sea-grass, which is his proper food, and also to bore a hole in the ice with it when he wants fresh air; possibly also as a weapon against his enemies. Another little horn, a span long, lies concealed in the right side of his nose, which probably is reserved for a fresh supply, if some accident should deprive him of the long one; and they say that as a ship was once sailing at sea it felt a violent shock, as if it had struck upon a rock, and afterwards one of these horns was found fastened in it. Formerly these horns, or tusks, were looked upon to be the horns of the fabulous land-unicorn, and therefore they were valued as an inestimable curiosity, and sold excessively dear, till the Greenland fishery was set on foot, when they found them in the northern parts of Davis's Straits in greater plenty than anywhere; yet for some time they carried on the cheat. They are so common in the north of Greenland, that the natives, for want of wood, make rafters for their houses of them; yet how unknown and valuable they were,



[Spearing the Narwal.]

even towards the close of the last century, may be seen, with several particular remarks, from La Peyrere, 'Relation du Grœnlande, à Mons. de la Mothe le Vayer.' Some have been caught with two horns of an equal length, but these must be very rare. This fish (cetaceous mammal) has two nostrils in the bone, but they run both into one aperture in the external skin. It has good blubber, swims with great velocity though it has only two small fins, and can be only struck when there are a great number together, and they hinder one another with their horns."

The use assigned to the tusk of the narwal by Crantz, viz. that of uprooting marine vegetables on which to feed, is altogether a supposition. As the male only has this instrument developed, or generally the male, the female must be reduced to sad difficulties in the procuring of food; but in truth the position of the tusk renders such a use as is here attributed to it impossible. Moreover it does not appear to subsist on marine fuci, or algæ, but on soft animal matters, as mollusks and fish. Capt. Scoresby found the remains of cuttle-fish in the stomachs of several which were opened by him, and similar remains were also found in the stomach of one driven ashore near Boston. As in the case of many animals of which the males have tusks, or horns, or antlers, and the females none, the tusks of the narwal are most probably to be regarded principally as a mark of sexual distinction, and secondarily as weapons of defence. The usual length of the narwal does not exceed sixteen or eighteen feet, exclusive of the tusk, though it is occasionally found larger.

Mr. Sowerby, in his 'British Miscellany,' states that the individual driven ashore, in 1800, near Boston in Lincolnshire, was twenty-five feet long: it had two tusks, five feet six inches long. It was formerly supposed that the ivory of this animal was an antidote against pestilential maladies; and various authors, among whom are Bartholin and Wurmius, have entered into this subject. It is said that the kings of Denmark had a throne composed entirely of narwals' tusks in the Château de Rosenburg. This superstition reminds us of the value of the horn of the rhinoceros in the East, cups made of which were said to give evidence of the presence of poison in the liquid they contain. Few, we believe, are now so credulous as to attribute miraculous virtues to the ivory tusks of any animal. Those of the narwal are, however, valuable from the closeness of their texture and their great hardness. In general form, as we have said,

the narwal resembles the porpoise, or grampus, but the head is small and blunt; the mouth is small, and not capable of much extension. The under-lip is wedge-shaped. The eyes are placed in a line with the opening of the mouth, at the distance of thirteen or fourteen inches from the snout, and of small size, being about an inch in diameter. The spiracle, or blow-hole, is a single orifice of a semicircular form, on the top of the head, directly over the eyes. The fins, or flippers, are about fourteen or fifteen inches long, and from six to eight broad, their situation on the sides of the animal being at one-fifth of its length from the snout. The breadth of the tail is from fifteen to twenty inches. There is no dorsal-fin, but a sharp ridge runs down the centre of the back, the edge of which is generally found to be rough and worn, as if by rubbing against the ice. Crantz describes the narwal as being black; it is only in young specimens that this colour can be said to prevail: at an early age the narwal is blackish-grey on the back, with numerous darker spots and markings running into each other, forming a general dusky-black surface. The sides are almost white, with dusky and more open markings: the under surface is white. In adult specimens the ground-colour of the back is yellowish-white, with markings varying from dark grey to dusky-black, and of a roundish or oval figure, with interspaces of white or yellowish-white between them. The skin resembles that of the common Greenland whale (Balæna mysticetus). but is thinner. The female narwal produces a single young one at a birth, which she nourishes with milk for several months: the teats are situated near the origin of the tail.

To the rapidity, the great powers, and the ferocity of the narwal when attacked, many writers have borne testimony. Its form is admirably adapted for cleaving the waters, and we can well believe that the shock of its weapon, driven full tilt against an enemy, must produce a terrible effect. The ribs of the stoutest boat would be transfixed by the dint of such a blow, far more easily than was ever shield by the lance of knight in battle or tournament. Several instances have indeed been known in which the animal has plunged his weapon deep into the thick oak timbers of a ship, when it has fortunately snapped short, the fragment remaining fixed in the orifice, so as to plug it up. A portion of wood taken from the hull of a ship with a piece of narwal's tusk firmly imbedded in it came some few years ago under our own inspection. It is probably only in defence of the females and their young, unless indeed when attacked himself, that the male narwal thus rushes against ships or boats; for we utterly discredit the usual accounts of its causeless and indiscriminate attacks upon any object which approaches within its range. Doubtless when wounded and harassed it becomes desperate; and its power, its velocity, and weapon combine to render it formidable.

The narwal is gregarious, associating in troops of from six or eight to twenty or more; and numbers are often seen clustered together, both in the open sea and in bays and inlets free from the ice, forming a compact phalanx, moving gently and slowly along. Under such circumstances the independent movements of each individual are necessarily embarrassed, so that a considerable slaughter may be easily effected among them. When attacked at such a time, the hind ranks, instead of turning against their assailants, press upon those before, sliding their long weapons over the glossy backs of their leaders, and all becomes disorder and confusion. Opportunities of this kind are welcome to the Greenlanders, to whom the narwal is an important animal. Independently of the oil, which the narwal yields in considerable quantity and of excellent quality, the flesh is much esteemed by these people as food, and eaten both fresh and in a dried and smoked state, being prepared over the fire of their huts. The tendons of the muscles are useful in the preparation of thin but tough cordage; and Duhamel states (see his 'Traité des Pêches') that several membranous sacs are obtained from the gullet, made use of as parts of their fishing apparatus. The ivory spear, or tusk, the Greenlanders employ in various household and economical purposes instead of wood, and in the manufacture of weapons, as darts or arrows, &c. When struck by a harpoon, the narwal dives with great velocity, and in the same manner as the whale, but not to the same extent. In general it descends about 200 fathoms; and on returning to the surface, is despatched by a whale-lance without any difficulty. The blubber is about three inches in thickness, and invests the whole body: it affords about half a ton of oil.

The narwal may be registered among the occasional visitants to the British shores. Of its visits, however, only three instances are on record, as far as we can learn. The first is recorded by Nicolas Tulpius in 1648. The second (to which we have before alluded) is that of the specimen killed, in 1800, near Boston in Lincolnshire, and said to have been twenty-five feet in length. The third instance occurred in 1806, at the Sound of Weesdale, in Shetland.

The origin of the word narwhale, narwhal, or narwal, is said to be from the Teutonic *nar*, or *ner*,* which signifies a beak or projecting snout; and *wal*, *wale*, or *whale*, an indiscriminate word, in the same great family of languages, for any of the Cetacea. Many writers consider that two distinct species of this animal exist, the Monodon microcephalus being different from the M. monoceros, and such is the opinion of Dr. Fleming. Cuvier, however, and other naturalists regard the M. microcephalus as identical with the M. monoceros, and this is evidently the opinion of Professor Bell, who, in his work on British mammalia, gives the former term as a mere synonym. Cuvier states that the "Narval microcephale" of Lacépède is nothing more than a common narwal, a little less miserably figured than his plate of the common species, which was copied from a bad figure by Klein, taken from an individual killed in the Elbe in 1736, and stuffed and exhibited at Dresden.

TOBACCO-PIPES.

THEIR VARIETIES AND THEIR MANUFACTURE.

Every personal enjoyment, whether reprehensible or commendable, is a certain source of income to *some* of our fellow-men: indeed it would excite no little surprise were we able to show how many millions derive their support from the preparation of luxuries for others.

The practice of smoking is, in many countries, carried on without the aid of a pipe; but in those where a pipe is used, the manufacture of those instruments gives employment to a considerable number of persons. The Arabs and Turks use their *tchibouk;* the Persians and Hindustanees, the *hookah;* the Germans, the *meerschaum;* the Dutch and the English, the *clay-pipe;* while in Spain, Italy, and every part of America, *cigars* are used, almost to the entire exclusion of pipes.

The materials of which pipes are made are exceedingly numerous—white and coloured earths, porcelain, metals, ivory, horn, shell, costly woods, agate, cornelian, talc, and amber, have constituted either the whole pipe or decoration for some of its parts. A recent French writer has observed, that the most costly of all pipes is one made of solid amber, without imperfections of any kind; one such has been known to cost the enormous sum of 2000 crowns. These amber pipes are very liable to fracture from the sudden access of cold after they have been smoked; they are therefore surrounded as much as pos-

* Cuvier, on what authority we know not, says that *nar*, in Icelandish, signifies a dead body. (See 'Règne Animal,' ed. 1829, p. 293, note 2.)

sible by a protecting covering. It is quite evident, however, that such a pipe is much more valuable for show than for use.

The Oriental hookah is a remarkable smoking apparatus, both in appearance and its mode of use. The principal feature is, that the smoke passes through water, loses the particles of tobacco which give it an unpleasant flavour, and becomes cool before it reaches the mouth. There is an air-tight vessel, half filled with water. On the top of this vessel is a bowl containing burning tobacco; and a small tube descends from the bowl into the water in the vessel. A pipe is inserted into the upper part of the vessel, above the level of the water; and the other end of this pipe the smoker holds in his mouth. This being the disposition of the parts, the mutual action of the whole is as follows: the smoker draws the air out of the vessel, and makes a partial vacuum, by the usual act of smoking,—the external air, pressing on the burning tobacco, forces the smoke to descend through the little tube into the water beneath;—after losing its solid particles in the water, it bubbles up into the vacant space above, and from thence passes through the pipe into the smoker's mouth.

In some parts of the East, a manifestation of hospitality is, to place the hookah in the middle of the apartment, and pass the pipe round from guest to guest, each one taking a whiff in turn. But on other occasions each one has a hookah to himself; and they are often decorated with costly gems. The pipe or tube which extends from the vessel to the mouth is generally made of some flexible material, for the convenience of use. Sometimes the liquid contained in the vessel is rose-water, by which the smoke not only loses its solid particles of tobacco, but also acquires a luxurious fragrance.

The term meerschaum, which is applied so generally to a particular class of pipes made on the Continent, is properly the name of the substance from which they are made. The Turks apply the name keff-kil (foam-earth) to the clay; while the same substance, when formed into bowls for pipes, obtains the name of meerschaum in Germany and écume de mer in France, both of which signify sea-froth. All these names are somewhat absurd, but they are said to have been derived from the circumstance that the bowls will float on the surface of water, and then appear somewhat like a white foamy bubble.

Dr. Clarke, while travelling through Russia and Turkey, paid particular attention to the mode of procuring this earth; as he considered that "there is perhaps no instance of any kind of clay giving employment to so many hands, or, after its original manufacture, passing through such a variety of modifications, and ultimately obtaining such enormous prices." This arises from the employment of the clay for other purposes besides tobacco-pipes.

The keff-kil is, in its mineralogical character, called magnesite, and is composed of 52 parts of silica, 23 of magnesia, and 25 of water. It is found abundantly in many parts of Turkey, Russia, and Hungary, as well as in Asia Minor. In the latter country it is discovered on the surface of the earth, by its whitish appearance; in its primitive state it is a white, moist, soft substance, which may be as easily cut as a piece of cheese. The people of the country, under a stipulated grant from the governor, collect this clay by digging it up in large lumps while in a soft state, in which state it may be kept for six months, if carefully covered with its own fragments. The mine or stratum is worked as far as the vein of clay extends, which it does in some places perpendicularly, and in others obliquely, to a depth of from five to fifteen yards. When a vein is exhausted, the miners search for another, and work it in a similar manner. There does not appear to be any horizontal communication between the beds of this substance; so that when one bed is exhausted, a useless empty pit remains. In the Crimea, the mode of digging is, to open a shaft in the ground, and work it till the sides fall in; and then seek out a new bed. A stratum of marl generally covers the clay; and through this they have to dig sometimes to the depth of from eight to twelve fathoms. At this place the stratum of clay is seldom so much as three feet in thickness.

When the clay is collected, a portion of it is rudely fashioned, on or near the spot, into tobacco-pipe bowls. The clay is pressed into a mould, and left in the sun to harden; the rough bowls are afterwards baked in an oven, boiled in milk, and rubbed with soft leather. After the clay has been wrought, it acquires that degree of hardness which it possesses in the finished form; but even then, when heated, it is easily scratched and penetrated by a sharp instrument.

When the spot is in the Turkish empire, dealers repair thither, and purchase the bowls of the makers, in order to carry them to Constantinople, which is the principal depôt for them, and where a bazaar is devoted to their sale. Dr. Clarke says:—"We had some difficulty in finding out this bazaar; but at last, being directed to Ouzoun Tcharchy, in the Fildjiandji Khan, we were conducted into a square court, like that of all other khans, surrounded by a wooden gallery; where, upon the floor of the gallery, we found the dealers in the pipe-bowls made of keff-kil, each dealer having a large pile of these bowls heaped upon a mat in an adjoining apartment. Hither come those merchants who export them by the caravans to Pesth in Hungary, where they are re-manufactured. In the state for exportation, they are every one of them as large as a man's fist, and look like a coarse manufacture of common pipe-clay; all the lustre and elegance which they afterwards exhibit being the result of subsequent management."

At Constantinople they are purchased by dealers from various parts of Germany, Russia, Poland, &c., and again submitted to the hands of the artisan. The reason for their costliness is to be found not only in the mounting of silver, &c. which often decorates them, but also from a great uncertainty attending the manufacture. They are soaked for twenty-four hours in water, and then turned in a lathe: in this process many of them prove porous, and are rejected; sometimes as many as seven out of ten. After being ornamented and finished, they will sell for from one guinea to seven, if elegantly finished; and what is very extraordinary, fifty guineas have been known to be given for a pipe which has acquired a fine porcelain yellow or a dark tortoise-shell hue, by the oil of tobacco imbibed during repeated smoking. There are connoisseurs who think that the particular kind of clay of which meerschaums are made imparts an improved quality to the tobacco; but we are unable to settle this point.

We must now turn our attention to the humble clay tobacco-pipe so extensively used in England and Holland. We will speak of the manufacture as carried on in England.

The clay employed is derived chiefly from Purbeck in Dorsetshire, and is nearly of a white colour. After it is purified from all extraneous substances, it is formed into cubical masses weighing about a hundred pounds each, and from such a mass the workman cuts off enough to make one pipe; and in so doing experience brings him to such a degree of exactness, that there is scarcely the smallest remainder after the clay has been put into the mould. Each piece is kneaded thoroughly on a board, and rolled out to nearly the form and size of a pipe, leaving a projecting bulb at the end for the formation of the bowl. When the clay has been left some time, after rolling, it acquires a certain degree of firmness sufficient to bear the remarkable process of boring. The workman takes the roll of clay in his left hand, and with his right

inserts the end of an iron needle in the small end of the roll: by a dexterous management, he thrusts the needle through the whole length of the roll, without once penetrating through the surface. This process requires a great deal of manual dexterity, in order that the bore may proceed as nearly as possible through the axis of the pipe. The enlarged bulb is then bent into the proper position to form the bowl.

The next operation is to press the clay, with the needle still retained in it, into a mould, in order to give it the requisite form. The mould is made of copper, and is in two parts, precisely similar one to the other. One section of it is laid down flat, and the clay (which is already formed to something like a pipe) is placed in it: the other half of the mould is laid on the clay, and the whole passed through a press, by which the clay assumes the requisite form, and at the same time receives any device, inscription, or ornament which may have been engraved or stamped on the mould. The bowl of the pipe is partially hollowed by means of the finger, and into the hollow thus produced a mould or stamp is introduced, which gives the proper internal form to the bowl. The perforation is then continued from the stem into the bowl, and the surface of the whole is slightly smoothed over.

When the pipe is formed, it is allowed to get partially dry, in which state any roughnesses that may appear on the surface of the bowl are taken off by means of a little horn instrument. It is moulded a second time, in order to remove any distortion of shape that may have occurred by handling it, and is then polished by rubbing it with a piece of flint bored with holes, through which the stem is passed repeatedly. It is said that a clever pipe-moulder will make three thousand five hundred in one day.

The pipes are made straight in the stem, but after the iron needle has been removed, they are slightly curved, and are then ready for the oven. The baking is curiously effected. The oven or furnace imparts a fierce heat to the crucibles containing the pipes; but the latter are, from the shape of the crucible, shielded from the flame and smoke, which would discolour them. The crucible is cylindrical, with a pillar rising through the middle, a hemispherical dome or cover, and six parallel ridges or shelves running round the interior, at equal distances from one another. On these shelves the bowls of the pipes are placed, while the small ends rest against the central pillar; so that the whole are arranged radially from the centre, inclining downwards; and so skilfully is this managed, that seven thousand pipes are baked in one crucible, without any two touching each other. The pipes are arranged in the crucible through an opening in the latter, which is then closed; and the whole are placed in a well-built oven, where they are exposed to heat for about eight hours, gentle at first, and gradually increasing in fierceness. They then assume that form which is so familiar to us.

Some of these pipes are twisted into fanciful forms: this is easily done when they are partially dry. The unpleasant adhesion to the tongue and lips, which so often occurs in using pipes, is occasioned by the great affinity or attraction which the clay has for water or moisture. A coating of sealing-wax, resin, or varnish prevents this adhesion.

The commonest kind of pipes are made in great quantities in Holland, and exported from thence to various countries. In France also the manufacture is so extensive as to afford employment to five thousand persons. In the towns of St. Omer and Arras, in the department of Pas-de-Calais, there are five large tobacco-pipe manufactories in activity, in which more than fifteen hundred persons (principally women and children) are constantly employed: the wholesale price is said to be about three centimes each (rather more than one farthing English).

All tobacco-pipes manufactured abroad, and imported into England, pay a customs duty of 30*l.* for every 100*l.* value.

The Turkish tchibouk may be deemed as holding a middle place between the Oriental hookah and the European meerschaum. Mr. Dodwell, in his 'Tour through Greece,' says that a Turk is generally very clean in his smoking apparatus, having a small tin dish laid on the carpet of his apartment, on which the bowl of the pipe can rest, to prevent the tobacco from soiling or burning the carpet. The tubes of the tchibouks are generally seven or eight feet long, and are made of cherry or jasmine wood. In most of the gardens in Greece there is a small plantation of jasmine, the stems of which are trained up straight, and sell for high prices. The bowls are made of a fine earth found near Thebes in Bœotia, and are neatly ornamented and gilt. The mouth-pieces are commonly of amber or stone, or a composition resembling the former: some of them are splendidly adorned with precious stones.

The Thermometer not an Indication of the Sensation of Cold.—During a calm, whether the thermometer stood at 70 degrees or at 7 degrees minus zero, was to me in sensation the same; and although I have experienced a difference in temperature of 80 degrees from cold to heat, and *vice versâ*, in the course of twenty-four hours, still its change was not sufficiently oppressive to put a stop to my usual avocations. I have been shooting grouse at every range of the thermometer, from the highest to the lowest point, wearing the very same clothing as in England on a summer's day—a fur cap, moccasins, and mittens excepted, instead of a hat; tanned leather shoes or boots, and kid gloves. Merely a cotton shirt was sufficient to protect my breast from the most intense cold that has ever been registered; and notwithstanding my waistcoats were made double-breasted, I never felt sufficiently cold to be under the necessity of buttoning them: neither flannel nor leather was worn by me in any way. It must be understood, however, that I am only speaking of the temperature during a calm, or when the atmosphere is but slightly in motion. The lowest descent of the thermometer would not prevent my making an excursion of pleasure; but a higher temperature by 40 degrees, accompanying a stiff breeze, would confine me to the house: the sensation of cold, as I have said before, depends so much more upon the force of the wind than upon the state of the thermometer.—*King's Journey to the Arctic Ocean.*

West Indian Fruits.—I do not think the fruits of the East are to be compared with those of the West Indies. I doubt if the Garden of the Hesperides could have boasted of such a profusion of golden tints, and such a variety of delicious flavours. In the order of their excellence, there is the imperial shaddock, "the grace and ornament" of a desert in the West Indies; the luscious granadilla, which none but Creole hands can duly prepare with sugar and Madeira; the melting avocado pear, which it is forbidden to eat without salt and pepper; the delicate anana, which must be tasted in the birth-place of the pine-apple, to understand the benefit that Ripley, the Jamaica planter, has conferred on the epicurean world; the mellifluous naisberry, which, like the medlar and some other fruits of precocious qualities in fashionable hotbeds, must be yellow at the core before it is mature: the full-grown pomegranate must not be forgotten, teeming with liquid rubies, and reminding the Eastern epicurean of the golden fruit, which grows (on the authority of Mahomet) on that extraordinary tree Tuba, which grows in Paradise close to the prophet's house, and is continually bending down its branches to present the passers by with grapes, dates, and pomegranates, "of size and taste unknown to mortals;" and, lastly, the blooming mango, whose exquisite hue is like the blush on the bashful cheek of a maiden of fifteen; and finally, indeed, the *agro dolce* admixture of the star-apple and orange, which stands not the proof of Seneca's test of wholesomeness, for the eating of the same may be a pleasant thing to-day, but by no means agreeable to-morrow.—*Madden's West Indies.*

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